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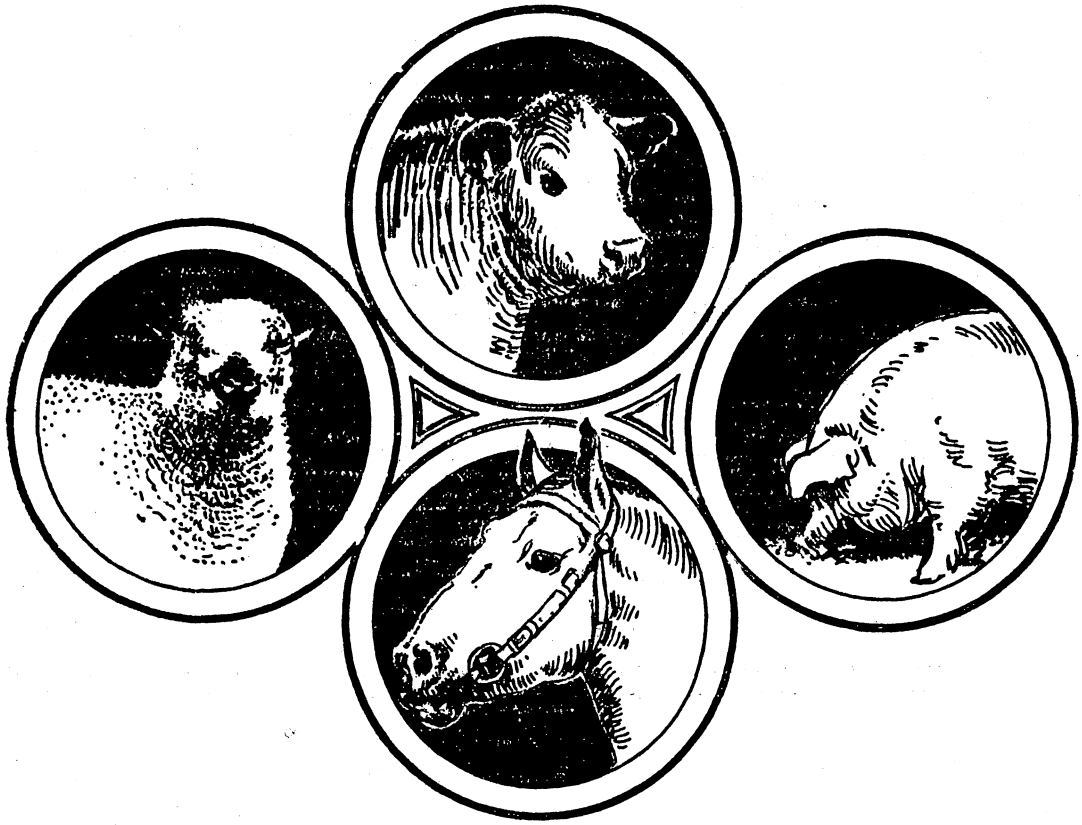
The EXTENSION ANIMAL HUSBANDMAN



UNITED STATES DEPARTMENT
OF AGRICULTURE
WASHINGTON,
D.C.

Serial No. 13

March, 1929.

T O L E R A N C E

The most lovable quality that any human can possess is tolerance.
Tolerance is the vision that enables us to see things from another's point of view.
It is the generosity that concedes to others the right to their opinion and their own peculiarities.
It is the bigness that enables us to get people to be happy in their own way instead of our way.

--- Public Ledger.

All communications regarding this publication, which is issued quarterly, should be addressed to:

C. D. Lowe,
Extension Animal Husbandman,
U. S. Department of Agriculture,
Washington, D. C.

UNITED STATES DEPARTMENT OF AGRICULTURE

Washington, D. C.

THE EXTENSION ANIMAL HUSBANDMAN

Issued by the Bureau of Animal Industry and the
Office of Cooperative Extension Work cooperating.

Serial Number 13 -- -- March, 1929.

Special Articles in this Issue:

"Studies in Systems of Breeding", by Hugh C. McPhee ..... Page 2

"Report of the Minnesota Lamb-Production Contest," by W. E. Morris ..... " 7

"West Virginia Purebred Ram Special," by Benj. F. Creech . " 10

"Pennsylvania Pork-Production Club," by L. C. Madison .... " 18

"Ton-Litter Work in Kentucky," by Grady Sellards ..... " 21

"The Minnesota Advanced Junior Sheep Project," by W. E. Morris ..... " 25

Also:

"Final Results of Michigan Pig Crop Contest, 1928" ..... " 6

"Results of Suckling Pig Immunization" ..... " 12

"Summary of 1928 Ton-Litter Work by States" ..... " 13

"What's New in the States" ..... " 14

"1928 Nebraska Pig Crop Contest Results" ..... " 20

"Final Results of Colorado Swine Herd Production Contest, 1928". ..... " 24

"Available Lantern Slide Series on Livestock Subjects" ... " 28

"Results of West Virginia Purebred Sire Campaign" ..... " 29

"Recent Publications" ..... " 30

STUDIES IN SYSTEMS OF BREEDING

by

Hugh C. McPhee,
Animal Husbandry Division, U. S. Department of Agriculture

- - -

For more than 20 years the Animal Husbandry Division of the Bureau of Animal Industry has maintained an active breeding project with guinea pigs for the purpose of making a thorough study of different systems of breeding. To date upwards of 50,000 guinea pigs have been produced in these experiments. The investigation is unique in the length of time it has been carried and for the isolation of several lines of breeding in which certain characteristics have become fixed.

Outline of guinea-pig experiments

The history of the project is exceptionally complete. In the year 1906 thirty-five pairs of guinea pigs were selected from a random stock and used to establish as many separate families. In a few cases there may have been a slight relationship between some of the animals but for the most part the members of each pair were unrelated. The offspring from each mating were bred together, brother with sister, and this system of breeding was continued indefinitely, or until the line ran out. Under such a system, some of the families soon became extinct and by the year 1915 only 18 of the 35 families remained. Of those which failed to survive, the larger percentage dropped out during the first few generations of inbreeding. In 1917 it became necessary for economic and experimental reasons to limit the number of families to five and the five most promising ones were retained. All five of these have survived to the present time, some of them having been inbred by continuous brother-sister mating for 29 generations. A control stock, derived from the same mixed group from which the inbred families were obtained, has been maintained for purposes of comparison. In this stock inbreeding has been avoided, no matings having been made which were closer than second cousins.

The data which have been recorded for each animal are: Number, sex, color, weight, and descriptions of any monstrosities which appeared. The weight was taken at birth, at 33 days of age, and at monthly intervals thereafter. The color was taken according to a definite genetic scheme and a coat pattern recorded to show the extent and shade of color for each animal. Such coat patterns served as an absolute means of identification in case the ear mark became obliterated.

The effects of inbreeding have been looked for in age of maturity, fertility, rate of growth, mortality among the young, resistance to

disease, sex ratio, and the production of monstrosities. Such characteristics are complex in their heredity and even though large numbers are employed in selecting for any one of them, progress in the desired direction is either slow or none at all. It is particularly important from the standpoint of breeding therefore that these inbreeding experiments have shown that such characteristics can be isolated and fixed in certain lines. This is probably the most important contribution of these studies. In regard to size and frequency of litters, per cent born alive and per cent raised of those born alive, birthweight, gains to weaning, and resistance to disease the five families have come to differ from one another.

It is important to note, however, that there was no evidence of the inheritance of general vigor. A family which excelled in one of the elements of vigor was deficient in others. That is, the separate characteristics which make up the general vigor of a stock seem to be independent of each other in heredity. There was, however, an average decline in all of these elements of vigor. Particularly the size and frequency of litters declined. In regard to weight and gains it was found that the greater effect was on gains after birth rather than upon birthweight. Animals in the non-inbred control stock weighed slightly more at birth and made more rapid gains, with the result that they weighed more at maturity than any of the five inbred families.

In a special study of the persistence of such differentiation among the inbred families, it was found that after the first 9 years of inbreeding, involving 12 or 13 generations, there was no significant further change as further inbreeding was practiced. The fluctuations which did occur in the various characteristics, due to environmental factors, were in almost perfect parallelism so that the relative positions of the families in these respects did not change appreciably. It is apparent that during the first 9-year period of close breeding the families had become pure in their breeding for the traits which characterised them as distinct families.

Crosses between the various inbred families resulted in marked improvement over the parental stocks in all cases. All of the vigor which had been lost through inbreeding was regained and in some cases a little more was added. In such crossbreeding the maximum effect is obtained in the first generation and decreases in following generations, although a certain portion is retained upon the resumption of random mating. Crossing results in improvement because in general each family supplies certain dominant factors which are lacking in the others.

The application of these results in livestock breeding are through the fundamentals of breeding which relate to such characteristics as litter size, frequency of litters, mortality, and gains. Inbreeding itself is only the process by the use of which differences in such

characteristics are brought to light and fixed. Nothing new is created by the process, but many hidden traits are sifted out and intensified so that what remains is in a much purer condition than at the start. How direct an application of the principle can be made in livestock breeding remains to be seen, but there is every reason to believe that similar results would be obtained. That an average decline in vigor would result seems inevitable. Yet it appears probable that all such lost vigor would be recovered upon crossing unrelated, highly inbred lines. The major difficulty is, of course, to establish the inbred lines in which hereditary differences have been brought to light and fixed. At the start, certain of the lines would almost inevitably run out for one reason or another, and this fact, together with the expense and long time required to establish a highly inbred line in the breeds of livestock, raises some question relative to the practical possibilities of the scheme. Yet it seems to be the only sure method of purification of the hereditary material.

Nearly all the characteristics of economic importance in livestock are of a kind which are determined only to a relatively small extent by hereditary in the individual. For instance, it was found in the guinea pig experiment that only about 30 per cent of the individual variation in resistance to disease and less than 10 per cent of that of rate of gain and size of litter is determined by heredity in the individual. That is to say that environment, including care and feeding, has much greater weight in bringing about variations in the individual than heredity. Progress by ordinary selection for such characteristics in a random population would either be exceedingly slow or none at all. Only by the establishment of a number of inbred lines can the part which heredity plays in the development of such characteristics be controlled.

To date we do not have much critical information on the results of continued inbreeding among cattle. It is true that livestock history throws a little light on the situation, but this is of such a nature that it can hardly be classed as critical experimental evidence. Inbreeding was practiced by some of the pioneer breeders with remarkable success in many cases and some of the greatest advances which have been made in livestock improvement have been due to the judicious use of inbreeding. Yet it must be remembered that these recorded successes represent only a fraction of the probable number of cases in which the method of inbreeding was used. It appears probable that there were many more cases in which the use of too much inbreeding resulted in failure rather than in improvement.

Inbreeding experiments with swine

With swine we have some more recent and specific information. Five years ago an inbreeding experiment with swine was begun by the Animal Husbandry Division for the purpose of applying some of the

principles derived from the results of the guinea-pig work. Two pairs of animals in each of the Poland China and Tamworth breeds of swine were selected as foundation stock to establish four lines of breeding. In the next year the Chester White breed was added to the experiment. The plan was to systematically breed litter mates until at least five generations of brother-sister mating had been reached. This plan has been followed to the present time.

The results of this investigation to date are in accordance with theory and expectation, but from the practical standpoint are somewhat disappointing. In all lines there has been a decrease in vigor and fertility and an increase in susceptibility to disease. Some lines are affected more than others. One line of Poland Chinas became extinct in the first generation of inbreeding. The other line went into the second generation but the litters averaged only about two pigs each and were so lacking in vigor that it was not possible to continue. The Poland China breed was dropped at this point. It seems probable that the failure to withstand the inbreeding was a strain characteristic rather than a breed characteristic, since a similar fate overtook one of the Chester White lines while the other has gone on into the third generation. The Tamworths seem to have withstood the inbreeding the best of the three breeds, but here again it is probable that it was luck in selecting lines which would stand up under inbreeding rather than the breed itself. We have one litter of fourth-generation Tamworths farrowed this spring and this represents the farthest that any of the lines have progressed. Since there was only one sow pig in this litter and this one was mashed when a few days old, it is certain that the fifth generation of brother-sister breeding is at least two years away.

Of the various difficulties which have inhibited the progress of the investigation, litter size and lack of vigor seem to be the most outstanding. Litter size has decreased, and of course when this occurs there is a greater chance that the pigs will all be of one sex. In many cases the sex distribution in the litters were so uneven that by breeding time one or the other sex was lacking. Then of course we had to wait until the next farrowing season for more stock. Many instances of this have occurred since the investigation was started. Failure to breed has not been a major difficulty, although difficulty in getting the sows to settle has occurred several times. For instance, two of the Tamworth gilts which were bred for fourth-generation pigs last year lost their pigs before farrowing time. These same gilts repeated the performance this spring so we have an indication that as the number of generations of inbreeding increase, trouble of this kind may be encountered.

It would not be fair to paint too black a picture of the effect of inbreeding in swine, because it is the only method of purifying the

heredity of swine and establishing true breeding strains. The automatic fixation of characters is one of the first effects of inbreeding and if there are inherited factors in the stock which are detrimental it is only to be expected that they will be brought to light and fixed. The thing to do, of course, is to inbreed and get rid of such factors. In our investigations at least two such inherited characters have thus far appeared. One is a sepia color in Poland Chinas and the other is swirls in Tamworths. The sepia color is evidently due to a single factor and is therefore easy to select away from. It is not yet certain how many factors are concerned in the swirl character, but it has become fixed in one of the Tamworth lines in spite of the fact that we were not attempting to retain it. But now that there is an inbred line which has this character, it is hoped that its mode of inheritance can be worked out and then we shall be in a position to tell the breeder the most direct way to get rid of it if he desires.

The evidence available at the present time shows that inbreeding systematically with swine is a thing which the farmer can not afford to do. This is also probably true of other classes of livestock, although there are rare cases where success has been attained and great improvement has resulted. But it appears that there is an incompatibility between purity of breeding in all respects and vigor in livestock, and since vigor is one of the most important characteristics of livestock from the economic standpoint it seems that it would be well for the producer to avoid intensive inbreeding as a general practice.

FINAL RESULTS OF MICHIGAN PIG CROP CONTEST - 1928

Name	No. of litters	No. of pigs	Total wt. at 180 days	Av. wt. per pig	Av. wt. per litter	Computed litter wt. with credit for more than 4 sows in herd
			Lbs.	Lbs.	Lbs.	Lbs.
C. N. Easton -	5	43	8,851	206	1,770	1,785
Victor Wilson -	4	30	6,391	213	1,598	1,598
Merrill Bradley	4	31	6,000	194	1,500	1,500
F. D. King ----	9	62	12,698	205	1,411	1,486
Clifton Lyon --	5	36	6,773	188	1,354	1,369
Karl Smith ---	25	155	24,768	160	991	1,306
Vern L. Lasey-	4	30	5,049	168	1,262	1,262
Dana Bennett---	5	32	5,614	175	1,123	1,138

REPORT OF THE MINNESOTA LAMB-PRODUCTION CONTEST

by

W. E. Morris, Minnesota Extension Service

- - -

The first Minnesota Lamb-Production Contest which was made possible through the financial support of the Minnesota Livestock Breeders' Association has been completed.

Enrollments were received for this contest in the late winter and spring of 1928. Thirty-five contestants enrolled from nineteen counties. Thirteen of these men from 11 counties finished the contest. The contest was open to any sheep raiser in Minnesota having 25 or more ewes lambing within the period from March 1 to May 31, 1928. No restriction was placed on breeding except that the lambs were required to be sired by purebred rams.

No restriction was placed in the feeding or management of the flock or lambs, it being left to the owner to adopt the system he considered best.

The contest closed for each lot of lambs when they averaged 135 days of age, at which time the official weights were secured. Awards were made on the basis of the average number of pounds of lamb produced per ewe. This was considered the best test of the ability of a market-lamb producer. It gave credit for a high per cent of lambs saved and fast gains made on each individual lamb.

To eliminate the advantage in management problems which a small flockmaster has over that of the larger, the contest was divided into three classes as follows:

Class 1, flocks containing 25 to 50 ewes
Class 2, flocks containing 51 to 100 ewes
Class 3, flocks containing 101 or more ewes

None finished in Class 3.

The champion was selected from the winners of the classes. Records received from each contestant were used to decide the champion flockmaster of the contest. This award was made on efficiency of management, gains made, and the success of the enterprise.

The purpose of the contest was to locate the most efficient sheep raisers in the State and to demonstrate the most effective method of breeding, feeding, and management.

Class One - The Winner

K. O. Johnson, Koochiching county.

The entry of Mr. Johnson won the class of 25 to 50 ewes. This flock of 35 ewes raised 50 lambs, or 142.8 per cent lamb crop. These 50 lambs averaged 82.2 pounds, or market weight, when they reached the average age of 135 days. The large lamb crop with the fast gains made by the individual lambs resulted in an average production of lamb for each of the 35 ewes of 117.4 pounds. A high per cent of lambs raised with good gains was responsible for the outcome.

Second Prize

Frank Passi, Lake of the Woods county.

Mr. Passi with his flock of 38 grade Shropshire ewes placed second in class one. His average weight of lambs at 135 days was higher than the first prize winner, being 87.5 pounds. He raised, however, a 118 per cent lamb crop, or a production of 103.6 pounds of lamb for each of the 38 ewes.

Second Class - First Prize

Sever Trehns, Houston county.

The class of 50 to 100 ewes was won by Mr. Trehns with his flock of 82 grade Shropshire ewes. Mr. Trehns won this placing due to having raised a high per cent lamb crop. These 82 ewes raised 117 lambs, or 142.6 per cent crop. The average weight per lamb was 65.5 pounds. The big lamb crop, however, increased the production per ewe to 93.4 pounds, the highest in the class.

Second Prize

C. E. Tatge, Rock county.

Mr. Tatge was a close second in this class. His average weight of lambs was 73.1 pounds or 7.6 pounds heavier than those of the winner. He produced a 123.5 per cent lamb crop which gave a production per ewe of 91.4 pounds. The lower number of lambs raised per ewe pulled down his good average weight per lamb so as to place him in second place.

Results of the Minnesota Lamb Production Contest,
1928

Rank	Name	County	Ewes	Lambs	Total weight	Average weight of lambs	Avg. wt. of lamb per ewe
		Class, 25 to 50 ewes			Lbs.	Lbs.	Lbs.
1	K. O. Johnson	Koochiching	35	50	4,110	82.2	117.4
2	Frank Passi	Lake of the Woods	38	45	3,939	87.5	103.6
3	George W. Benjamin	McLeod	23	32	2195.2	68.6	95.4
4	Harry Woolson	Pennington	28	31	2340.5	70.9	83.6
5	Martin Bergen	Lake of the Woods	30	31	2329	75.1	77.6
6	F. A. Booker	Olmsted	40	42	2965	70.6	74.0
7	F. A. Kruse	Lincoln	40	44	2754.5	62.6	68.8
		Class, 51 to 100 ewes					
1	Sever Trehns	Houston	82	117	7,663	65.5	93.4
2	C. E. Tatge	Rock	68	84	6,216	73.1	91.4
3	Henry Steinhoff	Murray	81	93	7,150	77.0	88.3
4	E. H. King	Fillmore	68	85	5,815	68.4	85.5
5	C. A. Johnson	Kittson	62			72.5	
6	Al Leibold	Fillmore	57	42	2,0365	48.5	

Champion flockmaster - K. O. Johnson, Koochiching county.
Per cent lambs born - 151. Per cent lambs saved - 142.8.

Conclusions

A. A high percentage of twins born and a high percentage of lambs saved are essentials for profitable market lamb production in Minnesota.

B. Pounds of lamb produced per ewe is the best test of the ability of a market lamb producer. Large gains per lamb are needed for most efficient production.

C. Healthy lambs make rapid gains on good pasture. Parasites if not under control will prevent such gains.

D. Legume hay is a cheap and most desirable feed for wintering breeding ewes, and should constitute at least 50 per cent of the roughage fed.

E. Desirable market lambs can be produced on abundant palatable pasture without grain feeding. If pasture gets short, grain feeding is profitable.

WEST VIRGINIA PUREBRED RAM SPECIAL

by

Benj. F. Creech, West Virginia Extension Service

- - -

The West Virginia Purebred Ram Special with its "double header" and eleven coaches was the largest agricultural demonstration train ever operated in the United States. The Special not only carried 217 purebred rams that were distributed to the farmers in 27 counties of the State, but its program was comprehensive, in that it gave the sheepmen the best known practices in production and marketing.

The Special made two stops a day, one in the morning and one in the afternoon, putting on a 3-hour program at each stop. These programs were participated in by a total of about 5,000 farm folk. The cost of the 217 purebred rams carried on the train was $7,895. The breeds represented were: Southdowns, 88; Shropshires, 82; Hampshires, 21; Dorsets, 12; Oxfords, 10; Cheviots, 3; and Cotswold, 1. These rams were selected on order from the farmers in advance of the Ram Special from eight different States by Col. E. L. Shaw. Sixty-seven of these rams were consigned by West Virginia breeders.

The West Virginia Purebred Ram Special and its program represented a combined effort of the Baltimore and Ohio Railroad Company; the State Department of Agriculture; the West Virginia College of Agriculture; County Farm Bureaus, and County Agricultural Agents to promote and popularize the production of market lambs.

Features of Program

At the beginning of each program the local county agent briefly outlined the sheep problems in his county and at the conclusion of his remarks introduced O. K. Quivey, General Agricultural Agent of the Baltimore and Ohio Railroad Company, who was assisted by Agricultural Agents E. B. Baugh and L. S. Hartley. Mr. Quivey briefly outlined his company's interest in the operation of such a train and stated that it was their desire to help West Virginia sheepmen to improve the quality of their market lambs.

Prof. C. V. Wilson of the West Virginia College of Agriculture was the next to appear on the program and outlined the "Master Shepherd" project which is being initiated for the first time in West Virginia. The aim of this project is to enlist a number of substantial sheepmen from every county who will carry out the best known practices in flock management and the marketing of their lambs and wool. These who satisfactorily carry out this plan for at least three years will be given a "Master Shepherd" certificate by the College.

I. B. Boggs, in Charge of Four-H Livestock Projects presented the junior sheep program of the State and introduced the State demonstration team, composed of Harold Williams of Harrison County and Robert Snyder of Grant County, who gave an instructive demonstration in the selection of the correct-type breeding ewe and a good-type market lamb. Both the ewe and the lamb used in the demonstration embodied the qualifications brought out in the discussion. This practical demonstration by Four-H club boys was an outstanding feature of the program, leaving with the sheepmen a concrete challenge to select more carefully their breeding ewes in order to produce with good shepherding practices the most profitable type of market lamb.

Following this demonstration, the writer discussed the value of the purebred ram for the production of market lambs. Since the ram stamps his likeness upon every lamb produced in the flock, he should be an individual of exceptional merit. The necessity for proper care of the ram and the importance of community breeding were emphasized.

Col. E. L. Shaw, representing the State Department of Agriculture gave an instructive demonstration in the proper methods of catching and handling sheep. He also gave a shearing demonstration, showing the correct methods for this operation. Col. Shaw spoke and acted with years of experience and wisdom acquired as a shepherd.

Following the shearing demonstration, Messrs. Shaw and Wilson held a post-mortem of a sheep infested with internal parasites. They were usually able to show the spectators large numbers of stomach worms, tapeworms, nodular worms, and whipworms. The sheepmen were then told of the means for controlling the parasites.

An attractive feature of the program for the housewives was a demonstration put on by Prof. J. H. Longwell of the College of Agriculture in which he made practical and attractive cuts of lamb, concluding his demonstration with the making of a "mock duck." Prof. Longwell brought out in his discussion that lamb was "nutritious" and "delicious" and should be made greater use of in the family diet.

The concluding number on the program was the drawing for sheep equipment which was given away by the civic organizations at each stop. The gift articles consisted of a hand-power shearing machine, pair of imported hand shears, docking irons, a dosing syringe, and cartons of copper sulphate given to the ten lucky men. This part of the program was very effective in helping to increase interest and attendance. At the conclusion of the drawing the men who had orders for purebred rams were invited into the sheep cars to make their selections.

West Virginia lambs already rate high on the eastern markets and it is quite probable that the 1929 lamb crop will show further improvement. The effect of the Purebred Ram Special will no doubt add materially to the quality production.

This was the third year in which the Special was operated. The fourth one has been scheduled for the last week in September, 1929.

RESULTS OF SUCKLING PIG IMMUNIZATION

The following data present the results obtained by the United States Bureau of Animal Industry in the immunization of suckling pigs.

Year	Number treated	Range in age at time of immunization	No. injected with virus to test immunity	Interval between immunization and test for immunity	Losses	
					No. head	Per cent
		Days				
1921	66	3 to 69	7	4 months	2*	-
1922	366	3 to 70	65	4 to 8 months	0	0
1923	936	1 to 68	809	4 to 6 months	14	1.7
1924	1,006	1 to 70	666	4 to 6½ months	195**	29.3**
1925	935	3 to 70	99	5 to 7-3/4 mos.	1	1.0
1926	1,334	8 to 70	23	7 months to 2 years	0	0
1927	1,360	39 to 70	37	9 months	0	0
1928	1,104	1 to 70	0		0	0
Total	7,137	1 to 70	1,706	4 months to 2 years	212	12.4
Total with 1924 pigs eliminated	6,131	1 to 70	1,040	4 months to 2 years	17	1.6

* These pigs were out of condition when tested and died, but without evidence of hog cholera.

** Weak virus for immunization in all probability explains the failure to obtain a substantial immunity in this case.

SUMMARY OF 1928 TON-LITTER WORK BY STATES

State	Litters weighing ton or more at 180 days of age.*	Average weight of ton-litters	Average pigs in ton-litters	Pigs in heaviest litter	Weight of heaviest litter
	Number	Lbs.	Number	Number	Lbs.
Alabama	11	2,182	9	10	2,908
Arkansas	25	2,287	9.1	11	2,899
Colorado.....	4	2,278	11	12	3,216
Georgia.....	15	2,360	11	15	3,605
Idaho	12	2,761	11	14	4,156
Illinois	29	2,302	11	12	2,980
Indiana	41	2,220	10.3	11	2,954
Iowa	11	2,236	--	12	2,738
Kansas	4	2,150	9	8	2,379
Kentucky	17	2,230	10.5	12	2,630
Louisiana	2	2,736	10	11	3,177
Massachusetts..	4	2,641	11.5	11	3,176
Michigan	11	2,351	10.9	13	2,805
Minnesota.....	30	2,461	11.6	14	3,280
Mississippi....	9	2,195	10.3	9	2,447
Missouri.....	10	2,300	9.6	10	2,465
North Carolina.	15	2,388	10.5	14	3,165
North Dakota...	9	2,300	9.9	12	2,812
Ohio	48	2,198	10.4	10	2,760
Oregon.....	5	2,248	12.6	15	3,128
Pennsylvania...	65	2,306	10.5	14	3,356
South Carolina.	9	2,596	11.2	15	3,174
Tennessee.....	40	2,367	10.7	11	3,192**
*Texas	22	2,021	8.9	10	2,606
Utah	2	2,270	11	13	3,146
Virginia.....	2	2,205	12.5	13	2,290
Washington.....	20	2,160	11.5	16	3,850
West Virginia..	1	2,350	9	9	2,350
Wisconsin.....	17	2,265	11	13	2,979
Wyoming.....	2	2,213	9	9	2,265

*Texas reported on the basis of 150 days of age.
**At 5 mos. and 18 days of age.

Pennsylvania with 65, again leads in total ton-litters for the year. Ohio, with 48 and Indiana with 41 are next, with Tennessee in fourth place. The grand total is considerably under the peak year of 1926. The growth in popularity of the farm-wide pig crop or pork production projects largely accounts for the decrease.

WHAT'S NEW IN THE STATES

Pennsylvania

W. B. Connell, sheep extension specialist since 1918, has been promoted to be head of extension animal husbandry, succeeding H. H. Havner, who recently resigned. Mr. Connell is a graduate of the Pennsylvania State College and took advanced work at the University of Wisconsin.

Wisconsin

James Lacey, former county agricultural agent in Green Lake County, Wis., has been appointed animal husbandry specialist to succeed H. J. Brant who resigned last fall. Mr. Lacey's appointment was effective on January 2.

Georgia

Up until the past year there had been very little work done toward improving the quality of beef cattle in Georgia. What work had been done was seriously handicapped due to the presence of the cattle fever tick. During the past year we placed about 75 purebred bulls with range cow herds in the State, at an average cost of $100.00 per head. These bulls were southern bred and raised. We hope for even better results during this year.

During the past year we placed 25 mutton rams with flock owners that had never used a purebred ram before.

The present lamb crop is showing up well and these sires have proved their worth to their new owners.

We have several flocks in different sections of the State under our direct supervision working on the spring lamb project. This promises to be one of our most profitable livestock projects. -- K. C. Litton.

Missouri:

In the Beef Production Contest for Kansas and Missouri five of the six prizes stayed in Missouri. The contest is financed by the Kansas City Chamber of Commerce, the Kansas City Stock Yards Company, and the beef breed record associations. The contestants are men cooperating with the college of agriculture in their production problems. The prizes go toward paying for purebred bulls. When the winners selected their bulls at the round-up sale in Kansas City it gave a lot of publicity to this piece of work.

In order to succeed in baby-beef production it is the first recommendation that a good bull be used, and the calves full fed from the time they will eat until sold.

The winner, C. C. Speck, sold 23 calves, weighing 696 pounds at market at $15.25 per hundredweight. They dressed 59 per cent.

H. M. Garlock and J. W. Burch, who have supervised this work have found the contest to be instrumental in arousing increased interest in more economical beef production. -- T. A. Ewing.

Texas

The sheep and Angora-goat business in Texas is increasing and is spreading to more parts of the State. Farmers in eastern Texas are establishing farm flocks of sheep and are giving them the care which is necessary to make the enterprise profitable. Angora goats are spreading to other parts of the State than the Edwards Plateau. Farmers and ranchmen in many sections where there is considerable brush on their land are finding that if Angora goats are properly handled, mohair can be produced on a profitable basis.

Wool growers are paying attention to quantity of actual wool which can be produced per head. On the whole they have a more nearly correct impression of the way in which shrinkage, length of staple, fineness, and general condition affect the value of their clips.

Stomach worms are still a serious problem. Many ranchmen are giving tetrachlorethylene in capsules with good results.

Most ranchmen in the business in this State have been of the opinion that their lamb business was as profitable, if not more profitable, than their wool sales. Consequently they are paying attention to the production of a desirable type and weight of feeder lamb. -- A. K. Mackey.

South Carolina

Considerable interest is now being shown in the sheep industry in South Carolina. Probably the county sheep clubs are doing more than any other agency to advance this work. The first of these clubs was organized two years ago in Fairfield County with H. Snelling as president and was called the Fairfield County Sheep Club. The number of farmers who are now raising sheep in that county has increased in that short time from less than half a dozen to thirty-five.

This club has worked for the improvement of sheep by the use of purebred rams and better feeding and management of the flocks. Last year this county made two cooperative carlot shipments of lambs, held a cooperative wool sale, put on a county sheep show, and exhibited sheep at the State Fair.

Encouraged by the success of this sheep club, other sheep counties are now organizing clubs.

On February 19, Abbeville County organized with J. Allen Smith, Jr., one of the best sheep breeders in the State, as president. On February 21, the Chester County sheep growers organized with J. R. Reid, Master Farmer of Chester County, as president.

Early lamb production seems to be the most attractive proposition. Native or grade ewes and purebred rams of the mutton breeds are mostly in use. Hampshire and Southdown rams are in greatest demand. -- A. L. DuRant.

Michigan

The total number of horses and colts on farms in this State decreased 4 per cent during 1928 to 409,000 head. The value per head increased $12.00. There is a keen interest in the horse-project work. Eight Michigan counties with 147 cooperators enrolled are entered in the Michigan Colt Development Contest. A series of meetings and demonstrations are held in each of these counties. The multiple hitch work met with much favor last year and gave some good results. Fifteen Michigan counties have scheduled multiple-hitch demonstrations during April and May 1929. The four, five, six, and eight horse hitches are being demonstrated. There is an increasing number of western range unbroken horses being shipped into Michigan for replacements. The horse-breaking demonstration as advocated by the Horse Association of America is being held in connection with our multiple-hitch and colt-development project work.

During Farmers Week, here at the college, between seven and eight thousand people witnessed the horse pulling contest and saw a new State record of 3,200 pounds established. This contest was between the three outstanding heavyweight teams of the State.

Sir Laet, grand champion Percheron stallion at the International in 1928, replaces Treviso as head of the Percheron stud here at the college. Preston Wolfe, junior champion Belgian stallion and winner of the King Albert trophy cup at the International, 1928, replaces Range Line Phoenix as head of the Belgian Stud.

The Michigan pig-crop contest is being run for the second year. The ton-litter contest has been replaced by the pig-crop contest. -- H. F. Moxley.

North Dakota

Due to the fact that many sections of North Dakota are especially well adapted to sheep production, there has recently been a marked increase in the number of small flocks established on farms. There is at present considerable interest in better methods of feeding and management of sheep in this State. To spread information on more economical methods of sheep production, a series of meetings on the feeding and management of sheep were held during the months of February and March in sections of the State where this work was most urgently requested. The attendance at these meetings was very good, and the results gratifying.

To further this work in economical sheep production, a simple lamb-production project for 1929 has been outlined somewhat similar to that which has been successfully carried on in a few other States during the past year. This contest should give sheep raisers in North Dakota an opportunity to demonstrate their ability as successful lamb producers. The purposes of the project are:

(1) To locate the most successful sheep raisers in North Dakota on the basis of the average number of pounds of lamb produced per ewe in the breeding flock, and to offer some recognition for their efforts and success.

(2) To determine the most productive type of mutton sheep and the best methods of feeding, pasturing, and general care and management.

Any farmer in North Dakota having 25 or more ewes in the breeding flock is eligible to enter. Ewes must lamb during the period from March 15 to June 15, and the lambs will be weighed when they average 140 days of age. Awards will be made on the basis of the average number of pounds of lamb produced per ewe in the breeding flock. To eliminate the advantage in management problems which a small flockmaster has over that of the larger, the contest is divided into three classes of breeding flocks as follows: Class 1, containing 25 to 50 ewes; class 2, containing 51 to 100 ewes; and class 3, containing 101 or more ewes. No restrictions will be placed on the use of any feed, the owner being free to adopt the system of feeding and management which he considers best. Farmers who enroll in the project are not required to weigh feed or keep absolute feed records, but at the close of the contest they will be asked to submit information as to feeding and management methods which were followed. This information will not be used in determining the winners, but it will be required of the contestant before the awards are made.

Sheepmen in the State seem to be taking considerable interest in this new project, and it is believed that it will prove to be a valuable aid in the spreading of information on more economical methods of sheep production in North Dakota. -- S. G. Denner.

PENNSYLVANIA PORK-PRODUCTION CLUB

by

L. C. Madison, Pennsylvania Extension Service.

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Three years ago we began to plan an extension project which would broaden and, possibly in time, take the place of the ton-litter project. We studied the pork-production contests which were being started about that time in several central-western States, and although they looked good, we felt that as outlined, there was a number of reasons why they would not meet conditions in Pennsylvania.

A project was developed which included not only all the sows on the farm but an entire year's work with all the hogs. We have called this project the Pennsylvania Pork Production Club.

As in the case of the Keystone Ton Litter Club, there is no contest feature connected with the project. It is developed strictly for its educational value to the cooperators and others, with the object of using the cooperating farms as demonstrations in successful pork production.

This being a group project, the county agent and specialist arrange to put on the project where ten or more farmers in a community agree to keep the required records. Four meetings are held during the year at periods when subjects of seasonable importance should be given consideration. The project can be started at any time but preferably in the fall, in which case at the first organization meeting such subjects are discussed as breeding stock, care and management of the herd boar, winter management of the brood sows, and advisability of winter construction of colony houses and equipment. The record book is explained and some inventories are filled out at the meeting; the others are filled out on the farm with the assistance of the county agent.

The second meeting is held before the spring farrowing season to discuss sanitation, care of the sows at farrowing and during the suckling and weaning periods, pastures, feeding, and summer management.

The third meeting is held during the summer in the form of a tour or field meeting, in order that several cooperating farms can be visited and their practices discussed.

A final or round-up meeting is held during the winter after the books have been closed for the year and summaries made. At this meeting the results of the year's work are discussed, comparisons made, and mistakes pointed out.

Although the meetings are held primarily for those keeping records, the public is encouraged to attend and the project really constitutes a rather intensive school on pork production for the community.

The record book has spaces for inventories at the beginning and end of the fiscal year, a record for all feed used, a labor record, a separate page for each brood sow with space for both spring and fall litters, spaces for expenses and income accounts, and a final page for a complete summary.

During the first year 1925 farmers enrolled in 12 groups in 10 counties. Although conditions have not been considered very favorable to the hog business, the profits in the first club after deducting 30 cents an hour for labor, ran from 19 per cent to 102 per cent on the inventory. Although all records showed a substantial profit, in every case it was possible to point out to the cooperator where he could have increased his profit by a slight change in his methods. Due to the fact that these suggestions were made as a result of his own records and those kept by others in the same group, they were very convincing.

This project proved very successful, and so far as the individual cooperator is concerned it is the most effective project the writer has undertaken. There is the disadvantage that it requires so much time that only a limited number of communities in the State can be covered in a year. The results, however, are of great value to the community and the information obtained by the specialist can be passed on to the farmers through meetings and articles, making it well worth while.

AMERICAN SOCIETY OF ANIMAL PRODUCTION

The report of the proceedings of the recent annual meeting of The American Society of Animal Production is now available. Extension animal husbandry workers will find much of interest in this publication, especially the papers presented at the extension section.

Intelligence is the thing that enables you to get along without education; education is the thing that enables you to get along without intelligence. -- Albert Edward Wiggam.

1928 NEBRASKA PIG CROP CONTEST RESULTS

(8 Farms above 1200 lbs. per litter)

Breeder	Breed	No. sows	Pigs farrowed	Pigs raised	Average litter weight	Cost per cwt.	Rations used
Honor M. Oschner, Madison County ...	D.&P.C.	10	96	78	1,608	$7.21	Corn, commercial feed, alfalfa, bluegrass, Sudan and sweet-clover pasture.
H. J. Kugler, Dawson County	D.J.	20	173	130	1,570	6.61	Corn, oats, tankage, skim milk, rye, alfalfa, and Sudan pasture.
John D. Meyer, Hamilton County ...	P.C.	10	101	81	1,511	8.09	Corn, oats, tankage, pig meal, oil meal, minerals, rye, rape, bluegrass, and sweet-clover pasture.
S. R. Sweet, Morrill County.....	D.	27	256	198	1,449	8.72	Corn, barley, protein supplement and alfalfa.
Fred Rehmeier, Cass County	C.W.	8	82	62	1,356	6.61	Corn, oats, tankage, pig meal, shorts, and alfalfa pasture.
George E. Hansen, Burt County	D.&P.C.	54	361	340	1,335	6.51	Corn, oats, tankage, pig meal, bran, minerals, and alfalfa pasture.
C. F. Eshelman, Webster County ...	D.J.	19	174	134	1,269	7.35	Corn, oats, tankage, alfalfa, cottonseed meal, shorts, cotton cake, buttermilk. Sudan and wheat pasture.
A. N. Christiansen Hamilton County ..	D.J.	12	-- 85	85	1,204	5.93 5.93	Corn, oats, tankage, buttermilk, alfalfa, pasture.

TON-LITTER WORK IN KENTUCKY

by

Grady Sellards, Field Agent in Swine Husbandry.

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Even to the most ardent exponents of the ton-litter project, it is patent that it has its obvious faults and weaknesses. It is true that the 180-day feeding period from birth sometimes produces pigs that are too heavy to sell on the market at top prices; that some contestants do not give due regard to economy of production, maximum weight in the allotted time being their goal; and that the ton-litter schedule of feeding may not be conducive to the development of desirable breeding stock. In spite of its weaknesses, however, this project has done more than any other extension project in raising the plane of efficiency in hog feeding and breeding. This is so because well-bred hogs, properly fed, are required to produce creditable records in the contests.

In Kentucky more than 200 ton-litters have been profitable to hog men, feed, labor, and pasture being the cost items accounted for in the records. We never have failed to make more than the feed cost on any litter, charging feed at market value in the various communities where the litters have been fed. This emphasizes the expediency of feeding hogs properly at all times and helps to establish the principle that any time a farmer has more hogs than he can feed properly, it is time to market a part or all of them. In the spring of 1928, a banker-farmer, when asked what he thought of the status of the hog business, answered by deploring the existing corn-hog ratio, and added that he then had a number of hogs on hand which he expected to feed only a sufficient amount to maintain them. It was pointed out that if his banking business were conducted in analogous fashion, at the end of 6 months instead of paying interest on time deposits, he could guarantee his patrons that there also would be no principal in the bank. This is precisely what happens when only a maintenance ration is fed to hogs. Reference to our ton-litter results impressed this man to the extent that he put his hogs on feed, and in so doing converted a losing project into a profitable enterprise.

It was difficult in the spring of 1928 to interest men in feeding ton-litters. It will be recalled that hogs were comparatively low, and corn high, in price. The proverbial light-feeding schedule supplemented by good pasture through the summer followed by a finishing period of feeding on new corn was a popular plan. The advent of

autumn and the new crop brought little relief from high corn prices. The hog market broke about September 20, the drop in prices being much greater than usual. As a consequence the hogs carried on the foregoing schedule were not so profitable as they would have been if carried over a full-feeding schedule from start to finish. In fact, some hog raisers express the opinion that they lost money on the late-marketed hogs. It certainly is true that only the early-marketed animals returned maximum profits. This is borne out by the records of twenty contestants of our 1928 ton-litter contest. The 20 litters sold for $11.95 a hundredweight, and yielded a net return of $3.64 per hundredweight above feed and pasture cost. Although the items of feed, pasture and labor do not account for the total cost, the manure produced usually will offset any additional factors involved in the cost of hog production.

A good method of calculating hog profits is on the basis of the hours of labor involved in conducting the enterprise. This was the plan we used in summarizing our results in 1928. It was estimated by contestants that an average of 78 hours was required in feeding and caring for each litter. On this basis the cash return for each hour spent in ton-litter feeding was $1.00. This interpretation of our records led one man jokingly to remark that "to beat that for wages, a fellow would have to go into plumbing, and even then to beat it a great deal, he would have to make more than the customary one trip back to town to get the proper tools and equipment before doing each job."

The feed required to produce each litter of 10 pigs that averaged in weight a little more than 200 pounds per pig at 6 months of age was as follows:

97.3 bushels of corn
435 gallons of skimmilk
140 pounds of tankage
731 pounds of shorts
482 pounds of commercial mixed feed

These records include the feed of the sow from the time she was bred until the pigs were weaned. So this table presents a fair idea of the amount of feed necessary to provide for each sow that farrows and raises 10 pigs in the spring. The amounts of each of these feeds should be slightly increased for each ten pigs raised by more than one sow. The corn fed to ton-litters in Kentucky last year was valued at $1.22 a bushel. Other feeds were proportional in price. It is seen that nearly three-fourths of the feed was corn. Corn and skimmilk taken together (skimmilk figured at the usual grain equivalent) amounted to about four-fifths of the total feed. This proportion can be increased on farms growing large amounts of their own supplementary feeds. The use of soybeans doubtless has tended to bring this about on many hog farms.

In their enthusiasm to win and to produce heavy litters that would enter successfully in the competition for awards, some contestants supply their pigs with complex rations that increase the cost of gains. In defense of this procedure it must be conceded that increasing the volume of business often accounts for a greater total profit than a decrease in cost per unit of production would amount to. A case at hand illustrates well this principle. In 1927 in Kentucky we obtained 54 records on litters fed in the ton-litter contest. Forty-three litters made an average weight of 2,372 pounds per litter, while 11 litters made an average weight of only 1,708 pounds per litter. The cost per hundredweight of gain by the ton-litters was $7.27, that of the gain by the "under" ton-litters was only $6.71, a difference of 56 cents a hundredweight in favor of the lighter litters. In spite of this difference in cost of production the ton-litters returned a total profit of $3.18 a litter more than the light-weight group. All factors, except volume of business, were equalized in arriving at this figure.

In Kentucky we permit the entrance of scrubs, grades, crossbreds, and purebreds into the contest. It is noteworthy that all our outstanding records have been made with purebreds, and that purebreds have predominated in numbers in the entries. We never have had a genuine scrub entry. This emphasizes that, although some men may have apparently little faith in the producing ability of purebreds, they are unwilling to confirm their apparent faith in scrubs by entering them in a contest that requires animals that have producing ability bred in them.

Our rules do not permit any part of a ton-litter to be raised on a nurse sow. This neutralizes any advantage that may accrue from owning a large number of sows. Too, this practice can hardly be justified as practical. A Kentucky litter may be marketed any time the contestant deems wise and still compete for honors in the contest. Usually it will be necessary to have the litter weigh a ton or more to get top price for it on the market.

Despite diligent effort to supersede it with projects more practical in nature, the ton-litter project remains the most universally popular swine extension project designed to disseminate improved feeding practices among hog men. The pork-production projects in many States amount simply to the application of ton-litter principles to entire herds, but this practice has long been in effect among extension workers in many States without naming the special project. In Kentucky we advise our ton-litter feeders to feed all their litters, regardless of the number of pigs per litter, as they do their ton-litter entries. Some of our entries do this. Certainly it would be inexpedient to advise that one litter be fed properly and at the expense of the other pigs on a farm.

Records have been a valuable phase of the work for us. It is

surprising how interesting these records have proved to be to other hog raisers. Records are the most effective medium through which to carry forth the experiences of ton-litter feeders. The records of farmers who have applied the findings of experiment stations will incite farmers to action in many communities more effectively than the original experimental results. On numerous occasions a remark like this has been made to the writer: "If John Smith can make that good a record, I believe I can too. I'll enter one in the contest."

Ton-litter contests, in addition to stimulating improvement in hog breeding and feeding, are assisting in getting large numbers of hog raisers to practice sanitation for prevention of internal parasites. While we don't require that our ton-litter contestants practice sanitation, we emphasize it so strongly that the majority do it. Ton-litter feed records are pointing out graphically that well-bred hogs properly cared for are consistently profitable year after year.

FINAL RESULTS OF COLORADO SWINE HERD PRODUCTION CONTEST, 1928

Name	County	Breed	No. of sows	No. of pigs	Total wt. of pigs	Av. wt. per pig	Pounds pork per sow
					Lbs.	Lbs.	Lbs.
Schrumpf, S. F.	Pueblo	Duroc	3	27	5,668.0	209.9	1,889.3
Nieber, Leroy	Larimer	Duroc	5	44	8,596.5	195.37	1,719.0
Stafford, F.T.	Boulder	Duroc	8	58	11,967.0	206.43	1,495.9
Lewis, Glen	Phillips	Poland C.	9	63	10,560.0	199.24	1,394.7
Lippett, H. B.	Logan	Poland C.	8	58	12,380.0	189.45	1,369.75
Brown, Cecil A.	Yuma	S. Poland	6	42	6,966.0	165.8	1,161.0

The Jury's Verdict

A farmer recently sued a railroad company for killing his cow. The jury's verdict, in favor of the farmer, read: "If the train had ran as it should have run; if the bell had rung as it should have rang; if the whistle had blowed as it should have blew, both of which it did neither--the cow would not have been injured when she was killed."

--- Farm Journal

THE MINNESOTA ADVANCED JUNIOR SHEEP PROJECT

by

W. E. Morris, Minnesota Extension Service.

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Marvin Nelson of Stevens County, won the first Minnesota advanced 4-H sheep-club project with average production of 162.9 pounds of lamb from his ten ewes. He raised sixteen lambs which reached an average weight of 101.8 pounds when they averaged 150 days of age.

The contest was organized this year to offer boys of advanced club age and experience an opportunity to enter a project on a scale larger than the regular 4-H livestock work. It was designed to add the problems of breeding and flock management to the feeding experience previously gained by club members, and to provide opportunity, when carried out efficiently, of making a larger financial return.

Boys between the ages of 18 and 24 or boys of younger age with four years previous experience in sheep-club work were accepted as members. To enroll it was required that each member own ten breeding ewes. These were to be fed and managed by him. Grade or purebred ewes were allowed, but the use of a purebred ram was required. The rules provided that the lambs must be born between March 1 and May 31.

All lambs were required to be docked and all grade ram lambs castrated. No restrictions were placed on the feeding or other methods of management.

When the lambs averaged 150 days of age, the official weights were obtained. These with the management records were used in making the awards which were based on the average production of lamb per ewe. This appeared to be the most equitable method of choosing the winners. In Minnesota we believe the best test of the ability of a market-lamb product to be the production of lamb per ewe. In making the awards in this way, credit is given for a high percentage of lambs raised, and for fast gains on the individual lambs.

To accomplish these things efficient management must prevail throughout the year.

Management Record

The winner's management record is of interest. On February 12,

1928, he purchased ten bred ewes at $15.00 per head. These ewes were mature westerns shipped in the previous fall and bred to a purebred Hampshire ram. In the fall sweet clover pasture and grain stubble fields provided abundant feed.

Winter Ration

Alfalfa hay constituted the winter roughage until they went on pasture May 15. Starting February 13 and continuing to May 30 grain was fed the ewes. Corn, oats, bran, and oil meal at the rate of about one pound per day constituted the grain ration.

The ewes were forced to exercise during the winter by feeding the hay at a distance from the shed. A cheap straw shed provided the winter shelter.

Feeding the Lambs

Six acres of a clover, alfalfa, bluegrass mixture provided the pasture for the flock. This had not been previously pastured with sheep. Starting May 1 the lambs were creep-fed a grain mixture, composed of corn, oats, barley, and bran. The last six weeks of the feeding period the lambs were taken from pasture, weaned, and fed alfalfa hay with the grain.

The ewes sheared 10.9 pounds of wool per head which sold locally for 38 cents per pound.

The ewes gave birth to 16 lambs all of which were raised.

The summary of the contest follows:

Results of Advanced Junior Sheep Project

(10 Ewes - Lambs 150 Days Old When Weighed)

Placing	Name	County	No. Lambs raised	Total weight of lambs	Avg. weight of lambs	Avg. wt. of lamb per ewe
				Lbs.	Lbs.	Lbs.
1st	Marvin Nelson	Pope	16	1,629	101.8	162.9
2nd	Robert Grant	Martin	15	1,400	93.3	140.0
3rd	Erwin Howard	Stevens	14	1,325	94.6	132.5
4th	Vernon Rairdin	Chippewa	15	1,240	82.6	124.0
5th	Floyd Tonn	Stevens	11	1,102	100.0	110.2
6th	Harold Getchell	Stevens	11	990	90.0	99.0
7th	Nettie Eklund	Stevens	10	702	70.2	70.2

Financial Return From Lambs

(Valued at 14 cents per Pound)

Placing	Name	Return from 10 ewes	Avg. return per ewe
1st	Nelson	$228.00	$22.80
2nd	Grant	196.00	19.60
3rd	Howard	185.50	18.55
4th	Rairdin	173.60	17.36
5th	Tonn	154.28	15.43
6th	Getchell	138.60	13.86
7th	Eklund	92.28	9.83

Wool return per ewe approximately $4.00

AFFIRMATION, REPETITION, CONTAGION

When it is wanted to stir up a crowd for a short space of time, to induce it to commit an act of any nature - to pillage a palace, or to die in defense of a stronghold or a barricade, for instance - the crowd must be acted upon by rapid suggestions, among which example is the most powerful in its effect. To attain this end, however, it is necessary that the crowd should have been previously prepared by certain circumstances, and, above all, that he who wishes to work upon it should possess the quality to be studied further on, to which I give the name of prestige.

When, however, it is proposed to imbue the mind of a crowd with ideas and beliefs - with modern social theories, for instance - the leaders have recourse to different expedients. The principal of them are three in number and clearly defined - affirmation, repetition, and contagion. Their action is somewhat slow, but its effects, once produced, are very lasting.

Affirmation pure and simple, kept free of all reasoning and all proof, is one of the surest means of making an idea enter the mind of crowds. The more concise an affirmation is, the more destitute of every appearance of proof and demonstration, the more weight it carries. The religious books and the legal codes of all ages have always resorted to simple affirmation. Statesmen called upon to defend a political cause, and commercial men pushing the sale of their products by means of advertising, are acquainted with the value of affirmation.

Affirmation, however, has no real influence unless it be constantly repeated, and so far as possible in the same terms. It was Napoleon, I believe, who said that there is only one figure in rhetoric of serious importance, namely, repetition. The thing affirmed comes by repetition to fix itself in the mind in such a way that it is accepted in the end as a demonstrated truth.

-- Gustave Le Bon in "The Crowd."